ABSTRACT

MANUFACTURE OF DIETHANOLAMINE FROM ETHYLENE OXIDE AND AMMONIA CAPACITY 34,000 TONS/YEAR (Design Reactor - 201(RE-201))

By

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Diethanolamine plant produced by reacting ethylene oxide and ammonia, will be built in Bontang, East Kalimantan. Establishment of this plant by raw material resources, transportation, labors and also environmental condition.

Plant’s production capacity is planned 34,000 tons / year, with operating time of 24 hours / day and 330 working days in a year. The raw materials used are ethylene oxide 4,705,150 kg/hr and ammonia 7,635,146 kg/hr.

Diethanolamine’s plant has utility unit for supply water, steam, power generation, and instrument air.

The business entity of this plant is limited liability company (PT) and using line and staff structure with 179 labors.

From the economic analysis is obtained:

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\begin{align*}
\text{Fixed Capital Investment} & \quad (\text{FCI}) = \text{Rp. 1,725,955,708.960} \\
\text{Working Capital Investment} & \quad (\text{WCI}) = \text{Rp. 304,580,419.228} \\
\text{Total Capital Investment} & \quad (\text{TCI}) = \text{Rp. 2,030,536,128.188} \\
\text{Break Even Point} & \quad (\text{BEP}) = 52.09 \% \\
\text{Shut Down Point} & \quad (\text{SDP}) = 28.91 \% \\
\text{Pay Out Time before taxes} & \quad (\text{POT}_b) = 3,004 \text{ years} \\
\text{Pay Out Time after taxes} & \quad (\text{POT}_a) = 3,493 \text{ years} \\
\text{Return on Investment before taxes} & \quad (\text{ROI}_b) = 19.79 \% \\
\text{Return on Investment after taxes} & \quad (\text{ROI}_a) = 15.83 \% \\
\text{Discounted cash flow} & \quad (\text{DCF}) = 21.59 \%
\end{align*}
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Consider the summary above, it is proper establishment of diethanolamine plant to be studied further, because the plant is profitable and has good prospects.